

The Perceived Research Capacity and Culture within Non-Metropolitan Local Health Districts in NSW

RURAL RESEARCH CAPACITY BUILDING PROGRAM, 2015
COHORT

NICOLE RASCHKE

MANAGER, RESEARCH OPERATIONS

MID NORTH COAST LOCAL HEALTH DISTRICT

nicole.raschke@health.nsw.gov.au



Quality and Excellence in Regional Healthcare

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Abstract

Aim

Increasing the capacity of organisations to participate in research is a means of evaluating new and improved practices and cost efficiencies. This study aimed to identify and understand the perceptions of research capacity and culture of the rural NSW Local Health District workforce.

Methods

A cross-sectional survey of rural NSW Local Health District staff was delivered in an online format. The Research Capacity and Culture tool was used to collect all research capacity and culture item variables using a 9-point scale (1=lowest, 9=highest). General demographic data was also collected to provide context. Descriptive statistics were reported of organisational, team and individual domains as well as the frequencies of barriers and motivators to research.

Results

A total of 691 participants completed the survey in its entirety. Overall respondents reported low range adequate organisational support (rescaled mean = 4.0) for research and less than adequate support at the team level (rescaled mean = 3.4). Individual skill ratings were adequate (rescaled mean = 4.5). Differences between LHDs were identified across all domains. 'Other work takes priority' was the most common barrier selected by 77% of respondents whilst developing skills was the most common motivator to do research (72%).

Conclusions

The results of this research found that rural healthcare workers perceive their individual skills and organisational support for research to be adequate and the team level of support to be less than adequate. This suggests that all levels need to be engaged to support and enable a multi-level approach (both top-down and bottom-up) to research capacity building strategies with particular attention focused at the team level. The barriers and motivators for research are consistent with those found in the literature.

Implications

Knowledge of existing research capability can assist organisations to make strategic decisions about how to engage rural healthcare workers in research activities and provide a baseline on which to measure their research capacity building strategies.

Keywords

research capacity, research culture, rural health, capacity building, health personnel

Executive Summary

Background

Rural and remote health services differ greatly from their metropolitan counterparts presenting unique challenges for health service delivery. Furthermore, it is widely understood that Australians living in rural and remote areas experience poorer health outcomes and higher health needs compared to their metropolitan peers. Traditionally, planning and delivery models are developed in the context of metropolitan settings resulting in service models and models of care that are not relevant to rural and remote communities.

Research is fundamental to health as it generates the knowledge needed to provide evidence for the best available care, but also to evaluate efficiencies of new processes. Traditionally, research has been driven by academia, however the push now is for healthcare to take an active lead in the identification of clinically relevant and appropriate research questions for the communities in which we live, particularly in rural areas.

Building the research capacity of healthcare organisations is high on both the federal and state government agendas and has been recognised by the rural NSW Local Health Districts (LHDs). In order to develop effective strategies, it is important to understand the current environment of research. The process of assessing an individual's research skills and knowledge may be measured objectively or subjectively. However, research capacity building strategies need to be developed and evaluated across multiple dimensions as the individual, team and organisational levels can have either a synergistic or detrimental effect on one another. The perceptions of research capacity at the organisational and team level influence the research culture of an LHD and the mobilisation of knowledge across the levels.

What we know about perceptions of research capacity and culture is largely based on studies conducted in metropolitan areas and in discrete healthcare professions. There has been little work done in the rural space on how staff perceive their organisational support for research. This paper is the first to focus on rural NSW LHD staff and their perceptions of the levels of support for research at an organisational and team level as well as their self-rated individual skill level.

Approach

All rural NSW Local Health District staff were invited to participate in an online survey to understand their perceptions of research support at the organisational and team level as well as their self-rated individual research skill level. Participants rated the organisational, team and individual levels of research support or skill on a scale from one (lowest) to nine (highest). This enabled classifying support or skill levels into less than adequate (one to three), adequate (four to six) and more than adequate (seven to nine). Staff were also asked to identify barriers and motivators to participate in research activities and free text was provided throughout to enable further comments. Demographic data of participants enabled an understanding of context of the data.

Findings

A total of 691 respondents completed the survey in its entirety. The major findings were that NSW rural LHD staff perceive:

- Organisational research support at the lower end of adequate and is lower than the reported literature of Allied Health Professionals in Queensland and Victoria and a Community Health Department of a NSW metropolitan LHD.
- Team research support is perceived as less than adequate which is lower than all published literature using the same tool.

- Individual skill rating is at the lower end of adequate.
- Different rural LHDs are at different stages of their research capacity building maturity according to the perceptions of employees.
- There still exists an interest and enthusiasm in research at the individual level despite the lack of perceived organisational and team support.
- The barriers and motivators to participate in research activities reported were that other work takes priority and to develop skills respectively. These are consistent with the literature.

Implications

The implications from the findings of this study is that staff perceive a less than adequate level of support at the team level within their organisations. This suggests that regardless of the investment into developing research capabilities within rural Local Health Districts the improvement in capacity and culture will be limited.

It is recommended that:

1. There needs to be a focus on facilitating and enabling team level support for research within organisations. Strategies may include providing research education and empowerment.
2. Research capacity building strategies should be top-down and bottom-up. Executive should provide the resources and infrastructure with input from staff at the 'coal-face' to enable staff to participate in research activities.
3. Research capacity building interventions should be evaluated using a relevant and validated and framework. Evaluation methods should be identified before the intervention is implemented.

Introduction

Regional, rural and remote health services differ greatly from their metropolitan counterparts presenting unique challenges for health service delivery. These differences include accessibility, availability, responsiveness and safety of health services (Australian Institute of Health and Welfare, 2016). Furthermore, it is widely understood that Australians living in these areas experience poorer health outcomes and higher health needs compared to their metropolitan peers (Australian Institute of Health and Welfare, 2014, 2016; Rural Health Standing Committee, 2011). Traditionally, planning and delivery models are developed in the context of metropolitan settings resulting in service models and models of care that are not relevant to rural and remote communities (Rural Health Standing Committee, 2011). Innovative approaches to multi-disciplinary care, the use of technologies, training, expanding scopes of practice and research targeting the specific needs of the community are ways in which these issues may be addressed.

Trostle (1992, p. 1321) defines research capacity building (RCB) as a “a process of individual and institutional development which leads to higher levels of skills and greater ability to perform useful research”. Research capacity building processes at the individual level may include education and mentoring of potential researchers (Harding, Lynch, Porter, & Taylor, 2016) and at the team level support for projects including protected time, skills training and team mentoring (Holden, Pager, Golenko, Ware, & Weare, 2012; McCance, Fitzsimons, Keeney, Hasson, & McKenna, 2007; Miller, Bryant MacLean, Coward, & Broemeling, 2009). Structure, processes, systems, formal or informal collaborations with external partners such as universities and career pathways all contribute to RCB at the organisational level (Golenko, Pager, & Holden, 2012). Research capacity therefore, is perhaps best viewed as a holistic process within an organisation to support individuals and teams providing the required support.

Assessment of research capacity is a means of identifying strengths and weaknesses as well as providing a baseline for future evaluation. This evaluation may be objective such as collecting data on the support mechanisms available, the number of research projects, publications etc. or it may be of the perceptions that staff have of their organisational and team support which gives rise to the culture of the organisation.

This report describes a cross-sectional study of employees on the perceptions of research capacity, barriers and motivators to conduct research across regional, rural and remote NSW Local Health Districts using the Research Capacity and Culture tool (Holden, Pager, Golenko, & Ware, 2012).

Literature review and rationale

Search Strategy

Medline, PubMed and Cinahl databases were searched using the terms “Research capacity”, “Capacity Development”, “Research Capacity Building”, “Research Capacity Strengthening”, “Research culture” and “Culture of research” all within healthcare organisations or hospitals. These terms were limited to English language and >2006. Grey literature was searched using Google and Google Scholar and InfoRMIT. Hand searching was also conducted using the references of articles retrieved. Searches were performed in April, 2016.

Why is research important?

Utilising evidence-based models of care and developing research questions to acquire new knowledge that is specific to the local communities and their healthcare organisations are important methods of understanding and improving the health of the population (Cummings, 2007) and in the long run, can influence policy (Thomas, 2011). An organisation with a culture of research is one that values the application of best available evidence, clinicians are encouraged to and given the opportunity to participate in research related activities including the acquisition of skills, research achievements are recognised and there is an investment of resource in research activity (Harding et al., 2016).

Barriers and Enablers to Conducting Research

A barrier is a circumstance or obstacle that impedes progress, whereas an enabler is a condition that makes it possible for something to happen. Frequently when authors refer to “barriers in research”, more often than not, they are actually discussing the lack of enablers to do research. Regardless of the term used, they preclude research activity in healthcare.

The barriers, or lack of enablers to conducting research within health organisations has been widely examined in the literature with the far majority of information gathered from metropolitan centres. A representative collection of those found may be categorised from the level at which they occur:

1. Organisational and Team level
 - a. a perception of the lack of the organisational support of research (Friesen & Comino, 2016; Lode, Sorensen, Salmela, Holm, & Severinsson, 2015; Miller et al., 2009; Soken, 2014)
 - b. absence of, or lack of awareness of linkages with academic health researchers (Golenko et al., 2012; Miller et al., 2009)
 - c. no organisational infrastructure, systems or processes to support research (Golenko et al., 2012)
 - d. lack of research champions or leaders to provide strategic direction for research within the organisation (Golenko et al., 2012)
2. Individual level
 - a. a lack of resources and time to undertake research (Bonner, 2008; Elphinston & Pager, 2015; Lode et al., 2015; Miller et al., 2009)
 - b. inadequate knowledge of research techniques (Bonner, 2008; Borkowski, McKinstry, Cotchett, Williams, & Haines, 2016; Elphinston & Pager, 2015; Friesen & Comino, 2016; Lode et al., 2015; Miller et al., 2009; Soken, 2014; Wilkes, Cummings, & McKay, 2013)
 - c. strategies to facilitate research utilisation (Lode et al., 2015)
 - d. other work takes priority (Lazzarini, Geraghty, Kinnear, Butterworth, & Ward, 2013; Pager, Holden, & Golenko, 2012)

From the evidence provided, there is a surplus of literature discussing what impedes research conduct in healthcare organisations. Enabling research across an organisation and its multitude of professions and disciplines requires more than the removal of one or two barriers at the individual and or organisational level. For instance, improving research skills may work for a limited number of staff to become involved, however for a comprehensive shift across the organisation a multi-layered, multi-faceted approach is needed to change the culture of the organisation and embed research into common everyday practice.

Measuring Research Capacity and Culture

A number of reviews assessing research capacity using the various tools exist in the literature (Borkowski et al., 2016; Condell & Begley, 2007; Huber, Napal, et al., 2015; Lizarondo, Grimmer-Somers, & Kumar, 2011; Lode et al., 2015; Segrott, McIvor, & Green, 2006). Huber and associates (2015) conducted a systematic review of tools and instruments for needs analysis, monitoring and evaluation of health RCB at an individual and organisational level. This paper revealed that assessment at the individual level such as research knowledge and skills development is quite well developed. However, assessing organisational research capacity only showed six articles indicating by the authors that organisational research capacity measurement is more complex. Of the 42 articles retrieved assessing these measures, at the time of the review's publication, it was reported that only two tools were used in two or more studies with publications on their use (Huber, Napal, et al., 2015). This indicates that more work is needed to standardise the definition and assessment of research capacity in order to build the knowledge and be able to compare and contrast RCB activities at a local, national and international level.

Measurement of research capacity in Australia found in the literature focus on either a discrete profession eg. Podiatrists (Lazzarini et al., 2013; C. M. Williams & Lazzarini, 2015), a group of professions eg Allied Health (C. Williams et al., 2015) or a type of healthcare centre eg Primary Health comprising a range of professions (Ried, Farmer, & Weston, 2006; Shah, Pond, & Heaney, 2002). Despite this range, the numbers of participants in each study are relatively small. Additionally, in Australia and beyond, the studies have focused on either centres in rural areas (Miller et al., 2009) or those in metropolitan areas (Friesen & Comino, 2016) with only two articles found to cover both areas, however the proportion of non-metropolitan participants were both very low (Howard, Ferguson, Wilkinson, & Campbell, 2013; C. Williams et al., 2015).

Research in the Rural context

New South Wales (NSW) and Federal government agencies have developed strategies to face the challenges for both the health and healthcare systems of rural communities by undertaking reviews of health and medical research more broadly. Through their frameworks, both levels of government recognise the need to enhance research at the local level in rural areas to target the challenges of service delivery and the health of those communities (NSW Ministry of Health, 2014; Rural Health Standing Committee, 2011), Both the National 'Strategic Review of Health and Medical Research' (McKeon Review) and the 'NSW Health and Medical Research Strategic Review' (Wills Report) highlight the need for stronger collaboration in research between organisations such as healthcare and academic institutions as well as embedding and building research capacity into healthcare (Commonwealth of Australia, 2013; NSW Ministry of Health, 2012).

Despite these efforts, there is anecdotal evidence of a disparity between regional and metropolitan centres in the capacity and capability to conduct research. This imbalance may be due to a number of barriers, or more specifically lack of enablers, from an organisational (e.g organisational support, research infrastructure, funding) and individual perspective (eg. lack of knowledge/skills/confidence, protected time) (Bonner, 2008; Soken, 2014; Wilkes et al., 2013).

A number of researchers have explored research capacity in rural areas in particular research capacity building programs (Barnett, Holden, Donoghue, Passey, & Birden, 2005; Miller et al., 2009; Salmon, Curtin, Ginnivan, & Neumayer, 2007; Schmidt & Kirby, 2016; Shah et al., 2002; Webster, Thomas, Ong, & Cutler, 2011) and evaluation (Fraser, Hawkins, Alexander, Fragar, & Robertson, 2006; Miller et al., 2009), however examination of the relationship between capacity (real and perceived) with culture is lacking.

A review of the literature finds numerous published papers on organisational culture (Martins, 2003; H. Williams, 2002), some on research culture within healthcare systems (Greenwood & Gray, 1998; Harding et al., 2016; Skinner, Williams, & Haines, 2015; Thomas, 2011) but nothing on research culture within rural healthcare organisations. This report therefore explores the gaps in the current literature by examining research culture and capacity in the Australian rural healthcare context.

In light of the push from the government for public health organisations to develop, conduct and participate in research, there is also an economic factor to “do more with less”. Research is also seen as a means to attract, recruit and retain highly skilled clinicians with an interest in research to the rural areas in an effort to combat the aging workforce.

Although there is evidence of the importance of research in health and the identified barriers and enablers, there have been few studies focusing on research within rural public healthcare organisations. Accordingly, the present study aimed to investigate the perceptions of healthcare workers with respect to research within rural NSW Local Health Districts at an organisational and team level, understand their individual skill rating and their attitudes of barriers and motivators using the Research Capacity and Culture tool (Holden, Pager, Golenko, & Ware, 2012).

Research Aim and Question

The main aim of this research was to assess the perceived research capacity and culture within regional, rural and remote Local Health Districts across NSW.

The specific research questions (i.e. objectives) are:

1. What are the perceptions of research capacity in rural NSW LHDs at the:
 - a. Organisational level, and
 - b. Team level?
3. What are the barriers and motivators for rural NSW LHD staff to be involved in research at their organisation?
4. What are rural NSW LHD staff perceptions of their own skill level in relation to research?

Methods

Study Design

A cross-sectional online survey of employees of rural NSW Local Health Districts.

Ethics Approval

A Low Negligible Risk Ethics application was submitted to the Greater Western Human Research Ethics Committee and approval obtained 1st March 2016 (reference: LNR/16/GWAHS/7). As per NSW Ministry of Health Policy (PD 2010_056), authorisation to commence the project from each participating LHD was obtained through the local Research Governance Office. The Site Specific

Assessment form was submitted to the LHD of the Principal Investigator and Access Request forms to the all other participating LHDs.

The Instrument

The Research Capacity and Culture (RCC) tool developed by Holden and associates (Holden, Pager, Golenko, & Ware, 2012) was used to measure perceived research capacity at the individual, team and organisational level (Table 1) as well as demographic questions to provide context (Appendix 2 – The Research Capacity and Culture Tool (Modified)). This tool was chosen because of its validity, strong internal consistency, reliability and previous use in the Australian context (Elphinston & Pager, 2015; Holden, Pager, Golenko, & Ware, 2012; Holden, Pager, Golenko, Ware, et al., 2012; Howard et al., 2013). Despite its use in multiple settings, not all researchers have used the RCC in its intended format. A summary of the published articles using the RCC and how it was used may be found in Appendix 1 – Publications using the Research Capacity and Culture Tool. For this study, the original RCC was modified from a ten point (plus ‘Unsure’) Likert scale to a nine point scale (plus ‘Unsure’) to allow for even categorization of more than adequate, adequate and less than adequate. Two additional questions were added by the Researcher to the end of the survey to explore job satisfaction and intention to leave (Appendix 2 – The Research Capacity and Culture Tool (Modified)).

Table 1 Number of items in each Domain of the RCC

Domain	Number of Items
Organisational – provision of support by the LHD	18
Team – support offered at the department/ward/unit level	19
Individual – respondents own skills	14

Participants and Recruitment

Table 2 Participating Local Health Districts

This study was conducted only in non-metropolitan NSW Local Health Districts (LHDs) listed in Table 2 Participating Local Health Districts

Rural and Regional NSW Local Health Districts

- | | |
|---|-----------------|
| 1. Far West | 4. Murrumbidgee |
| 2. Hunter New England (excluding Newcastle) | 5. Northern NSW |
| 3. Mid North Coast | 6. Southern NSW |
| | 7. Western NSW |

Eligible participants included all staff

within those LHDs with an email address in the organisation’s address book. To maximise response and reduce bias, a global email from each rural LHD’s Chief Executive office (or delegate) was distributed to all staff inviting them to participate and complete an online survey (www.surveymonkey.com). The number of staff or email addresses from each organisation was not collected as it was considered to not offer accurate information of the number invited to participate as staff may be on leave, emails not read, or email address not current. Therefore, the participation rate cannot be calculated. It was also decided not to limit the invitation to certain professions eg clinicians only, so as to be inclusive of all staff across the organisation who may have an interest in research regardless of their occupation. The invitation email and first page of the online survey contained information regarding the purpose of the study, ethics approval information and participant rights (risks and potential benefits, voluntary participation and the ability to withdraw at any time). Anonymity was considered necessary to encourage full and honest responses and therefore names were not collected in the survey and respondents were only identified by a computer-generated code. Unfortunately, this also restricted the ability to save and return to the

survey at a later time. Completion of the survey constituted consent. A forced response was imposed on all survey questions to encourage a full data set (with the exception of the ‘Motivators’ set of questions). Three reminder emails were distributed within a 2-month period since the initial invite at each LHD. The survey was available online for a total of 6 months from June to December 2016 to account for the distribution of sites’ authorisations to participate in the study.

Data Analysis

Data were analysed using IBM SPSS Statistics software version 24. Descriptive analysis of each demographic variable was expressed in numbers and percentages. The RCC results for the organisational, team and individual domains were analysed as ordinal data (scale 1 – 9) and a domain mean for each LHD recorded. An rescaled mean was calculated to enable comparisons with the published literature using the same tool (raw mean x 10/9)(Holden, Pager, Golenko, & Ware, 2012). Standard deviations were not calculated or reported as the response scale was 1 – 9 and would offer no useful information. ‘Unsure’ responses were scored 0 and not included in the calculation of descriptive statistics but reported separately. The overall domain means, based on the mean of the rescaled items for each domain was interpreted as less than adequate (less than 4), adequate (4.0 – 6.99) and more than adequate (greater than 6.99) in line with the previous published literature (Friesen & Comino, 2016). Frequencies were calculated for the motivators and barriers to research. Free text items were analysed thematically.

Results

Study Sample

A total of 1016 participants started the survey. Two responses were excluded as they were not staff of a Local Health District (University staff member and a Specialty Health Network staff member) leaving 1014 eligible respondents. As participants could not save the survey and come back to it at a later time to preserve anonymity, it is not possible to deduce if or how many participants started the survey more than once. The number of responses by each LHD is shown in Table 3 and their respective completion rate with providing a summary of the question group sequence and breakdown of where participants withdrew from the survey. The overall percentage of respondents completing the survey was 68% leaving a final full completion of 691 surveys.

Table 3 Completion rate of surveys by LHD

LHD	Surveys Commenced	Completed Surveys (%)
LHD 1	54	34 (63%)
LHD 2	34	24 (71%)
LHD 3	175	118 (67%)
LHD 4	219	144 (66%)
LHD 5	82	63 (77%)
LHD 6	206	142 (69%)
LHD 7	244	166 (68%)
Grand Total	1014	691 (68%)

Table 4 Question group sequence and number withdrawn from survey

Question Group	Completed Surveys	Withdrew from survey
Organisational Domain	1014	0
Team Domain	794	220
Individual Domain	714	80
Research Activity, Role	713	1
Barriers & Motivators*	698	15
Demographics - age, working history, profession	697	1
Demographics - qualifications, current study	694	3
Intention to leave and role satisfaction	691	3

* *Motivators was optional and had 678 respondents*

The number of respondents selecting ‘unsure’ for all items in the organisational and team domain were low (3.2% and 3.3% respectively) indicating that participants made an effort to provide meaningful responses when the information was known (Appendix 3 – ‘Unsure’ Survey Responses). When examining individual items of each domain, one in five respondents selected ‘Unsure’ for 11 of the 18 items from the organisational domain (Appendix 3 – ‘Unsure’ Survey Responses, Table 6). Responses in the Team domain performed better with only one in ten respondents selecting ‘Unsure’ for ten of the 19 items (Appendix 3 – ‘Unsure’ Survey Responses,).

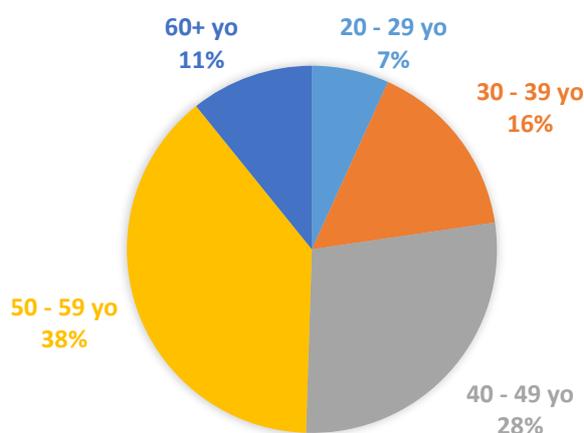


Figure 1 Survey respondents age range (n=697)

PhDs and 11% of participants are currently undertaking further studies. Of those 11% 16.2% (n=12) are PhDs. The most frequent professions responding to the survey were nurses (43.6%) and allied health professions (25.7%). The above details and further features of the respondent demographics may be found in Appendix 4 – Participant Demographics.

Figure 1 provides an overview of the age range of survey respondents. In summary 77% of participants were over the age of 40. Of those who have worked in healthcare for over 10 years (76.5%), 61.7% have been at their current organisation for at least five of those 10 years. A total of 29.9% of respondents had research in their position description with LHDs 1 and 3 reporting the highest frequency of 37.7% and 36.1% respectively.

Many respondents (62.5%) have postgraduate qualifications, including

Perceptions of Research Capacity

Organisational level

The rescaled organisational domain mean for all rural NSW LHDs was considered to be in the low range of adequate in their research support skills (rescaled mean = 4). From the information provided in Figure 2 only three of the seven LHDs were considered to provide adequate support (LHDs 1, 2 and 3), although in the lower range.

Appendix 5 – Organisational Domain provides a ranking of all organisational items by the domain and rescaled means for all rural LHDs. All LHDs scored ‘Promotes clinical practice based on evidence’ as their highest research skill statement and in the mid to high adequate range. Overall seven of the 18 items (39%) were rated as adequate with the remainder (11 items) as less than adequate in their research skill statement for the aggregated LHDs. LHDs 1, 2 and 3 had the most items scoring in the adequate range (4 – 6.99) with 89%, 67% and 83% respectively. Of note is that no items were scored more than adequate for any LHD (rescaled mean score 7 or greater).

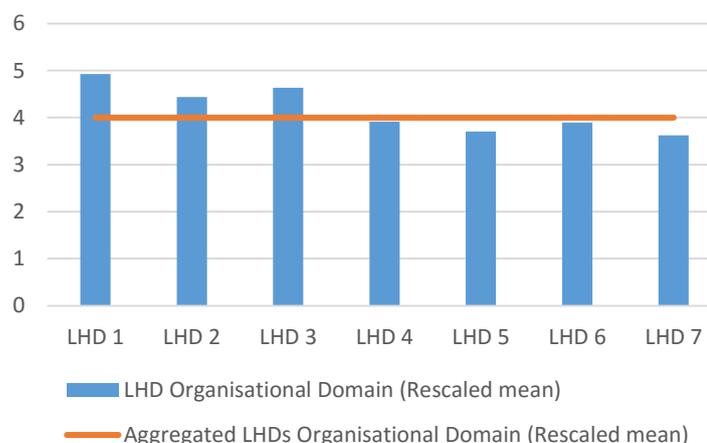


Figure 2 Organisational Domain (Rescaled means)

Team level

The rescaled mean team domain level for all rural NSW LHDs was considered to be less than adequate (rescaled mean = 3.4) with only one LHD rating within the adequate support range (LHD 1) and two above the rural average (LHDs 1 and 3) (Figure 3).

Appendix 6 – Team Domain details in ranked order the team level domain items. Overall, only two of the 19 items in the team level domain scored adequate across the LHDs – ‘Provides opportunities to get involved in research’ and ‘Has funds, equipment or administration to support research activities’. Again, LHD 1 rated the team level support the greatest with 17 of the 19 (89%) items scoring in the adequate range. LHD 3 was the only other organisation above the aggregated LHD mean with its participants scoring 47% of items in the adequate range.

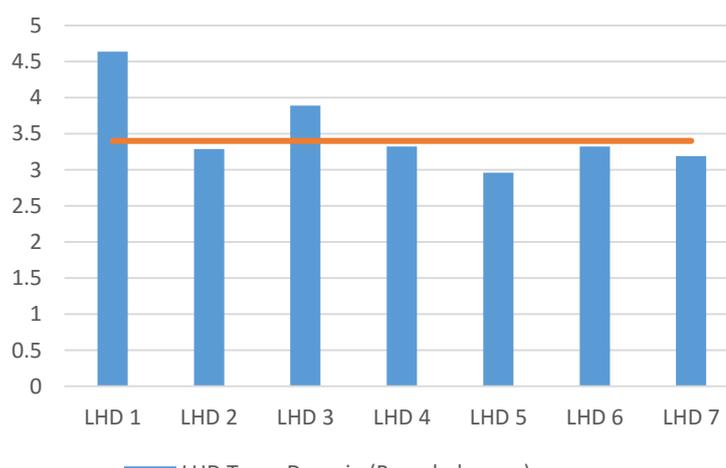
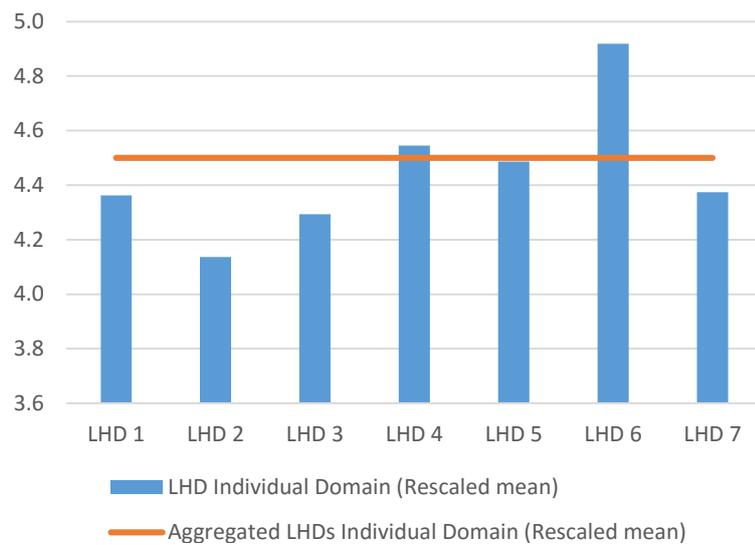


Figure 3 Team Domain (Rescaled means)

Individual level



The rescaled mean for the Individual domain research skill across rural NSW LHDs was adequate (rescaled mean = 4.5) with three of the seven LHDs rating themselves above the rural average (LHDs 4, 5 and 6) (Figure 4). Six of the seven LHDs rated more than 56% of the items in the adequate range (LHDs 1, 3, 4, 5, 6 and 7) whilst in comparison respondents in LHD 2 only scored themselves 43% an adequate research skill level for the listed items (Appendix 7 – Individual Domain).

Figure 4 Individual Domain (Rescaled mean)

Overview of Perceptions

Figure 5 displays each LHD for all domains and clearly displays disparities between the perceptions of organisational, team and individual research skill levels. It can be seen that LHD 1 has the closest alignment of all domains whilst LHD 5 presents the widest disparity between the perceptions of their individual skills and the team level support for research.

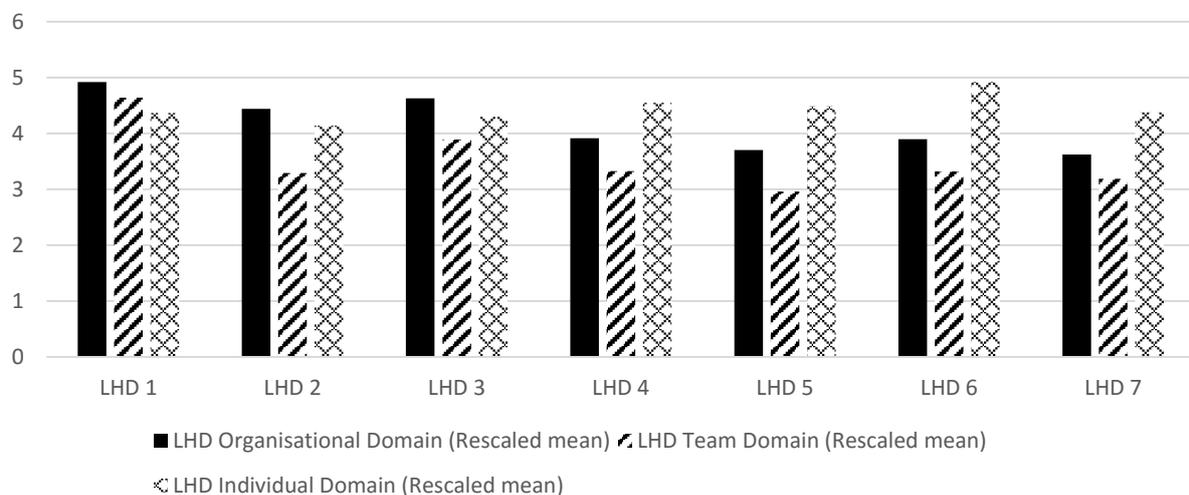


Figure 5 Rescaled means of all Domains across all LHDs

Motivators and Barriers to Research

A total of 698 participants completed the question relating to barriers to research. Figure 6 displays the percentage of respondents selecting that barrier. The top three barriers overall for the combined rural LHDs were 'Other work takes priority', 'Lack of time' and 'Lack of funds' with 77%, 72% and 55% of all respondents checking those barriers respectively. Generally, all LHDs followed the same pattern of barriers within their organisations (Appendix 8 - Barriers to Research by LHD). Each respondent reported an average of 6.6 barriers to do research. An option was available for respondents to enter free-text of barriers not listed. The most common themes included:

- issues with employment contracts and the feeling that therefore research is not available,
- intimidated or negative past experiences with the ethics process, and
- issues with the identification of a research topic that would be supported by management/organisation.

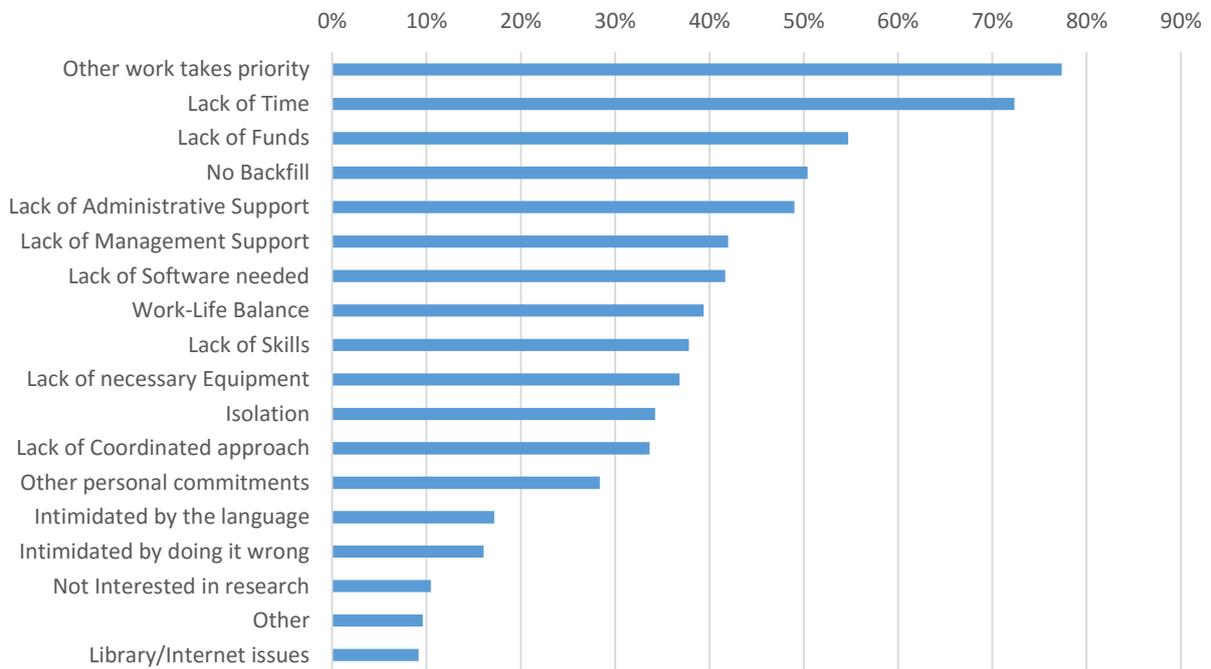
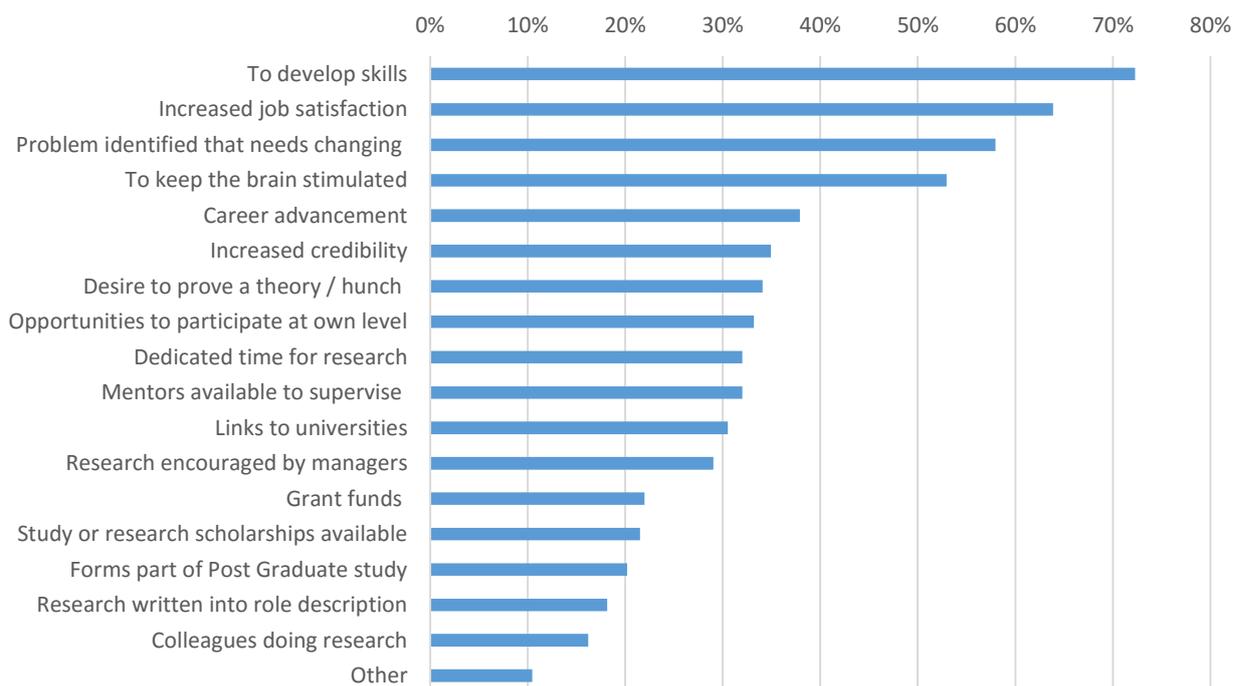


Figure 6 Barriers to Research (% of responses)

When asked for the reasons to do research 678 participants selected a total of 4199 motivators averaging 6.2 per respondent. The top three motivators selected were to develop skills (72%), increased job satisfaction (64%) and the identification of a problem that needs changing (58%). Similarly to the barriers, the pattern exhibited by each LHD was uniform (Appendix 9 - Motivators to Research by LHD). Additional free text was provided for motivators not listed and respondents



included the provision of evidence based care, personal fulfilment and the ability to contribute to knowledge or their profession.

Figure 7 Motivators to do Research (% of responses)

Discussion

This is the first and largest study in Australia to focus only on rural healthcare workers across all professions and explore their views and impressions on research from within their organisation. The central research question for this study was *“What is the perceived research capacity of rural New South Wales Local Health Districts?”* This was investigated by exploring the perceptions of research support at an organisational and team level, rating individual skill level as well as looking at barriers and motivators to do research.

The tool

Comparisons between the results of this study and that published in the literature using the same tool should be interpreted with caution for several reasons: the original tool developed in 2012 had a total of 55 items (20 organisational, 20 team and 15 individual) with the current version having 51 items (18 organisational, 19 team and 14 individual). Studies have been conducted on both and published. This may result in problems when comparing the overall means of domains. In addition, the original tool is validated using a 10 point scale with an ‘Unsure’ option. Research has been published using the original scale and also the ‘Unsure’ option removed. An overview of publications and their use of the tool can be found in Appendix 1 – Publications using the Research Capacity and Culture Tool. In this study the RCC was modified to a nine-point scale with ‘Unsure’ to be able to categorise the responses into equal measures of ‘Less than adequate’ (score 1 – 3), ‘Adequate’ (score 4 – 6) and ‘More than adequate’ (score 7 – 9) support or skill. The results of the raw data of this study can only be confidently compared within itself or with any future studies which may use the nine-point plus ‘Unsure’ scale. It is for that reason it was decided to calculate rescaled means of overall values of items per LHD and domains in order to be able to make exploratory comparisons with the published literature using the same tool.

Participants

The sample in this study revealed a higher proportion of postgraduate (including PhD) qualified respondents (almost 63%) in comparison to other studies using the RCC tool in Australia where the percentage ranged from 5% to 42% (Friesen & Comino, 2016; Holden, Pager, Golenko, & Ware, 2012; Howard et al., 2013; Pager et al., 2012; C. M. Williams & Lazzarini, 2015) with the exception of Elphinston’s (2015) study with psychologists as the population (70%). Postgraduate qualifications have been reported to be a significant predictor of perceived importance of research and adoption of evidence based practice (Friesen & Comino, 2016) and may account for those who see the importance of research being more likely to complete the survey. Respondents indicating that research was part of their position description accounted for almost 30% of participants which is similar to the findings of other studies (Elphinston & Pager, 2015; Friesen & Comino, 2016; Howard et al., 2013; C. M. Williams & Lazzarini, 2015).

This study represents the aging workforce in the rural sector with over 77% of respondents aged 40 years or over. Nationally, almost 76% of the nursing and medical workforce are over the age of 35. This also compares with studies investigating podiatrists combining the rural and metropolitan workforce where only 43% and 44% were over the age of 38 and 40 respectively (Lazzarini et al., 2013; C. M. Williams & Lazzarini, 2015). This indicates that the NSW rural public healthcare system has a higher percentage of a ‘mature’ workforce. This is also reflected with 76% of this sample

working in health for more than 10 years compared with 39% of psychologists (Elphinston & Pager, 2015) and 67% of a multi-professional group (Friesen & Comino, 2016) both from metropolitan settings.

Perceptions

The Research Capacity and Culture (RCC) tool measures perceptions of research capacity across the levels of organisational and team support as well as individual skill. This parallels Cooke's (2005) concept that capacity development strategies across the three structures should not be measured in isolation as the impact of one level can have either a synergistic or detrimental effect on the others. This is further reinforced by Kislov (2014) who contends that the team or group mediates learning from the organisation to the individual through dialogue and shared practice. Birken (2012) furthers this notion by suggesting that middle managers also provide the mediation between strategy and day-to-day activities. The findings of this survey revealed that the team or group levels of support do not offer the connection needed between the organisation and the individual which is similar to the findings of the study of psychologists (Elphinston & Pager, 2015). This is in contrast to other studies using the same tool where the individual skill rating scored the lowest of the three domains (Friesen & Comino, 2016; Holden, Pager, Golenko, & Ware, 2012; Holden, Pager, Golenko, Ware, et al., 2012; Howard et al., 2013; Lazzarini et al., 2013; C. M. Williams & Lazzarini, 2015). Unfortunately, this indicates that regardless of the organisational investment into research, if it is not supported at the team level, then the growth of research capacity and culture will be limited. At a more detailed level of analysis, the senior manager support item of the organisational domain and the team leader support item at the team domain differ in their overall rescaled means quite dramatically (4.4 vs 3.6). One respondent summed up the discordance between organisational and team for support with this insightful comment:

The LHD appears to support research at an executive level However, direct line management and senior management do not seem to support the use of employed time in research or acknowledge ideas for future research unless it is something they want to pursue.....

Despite the overall perceived lack of support at the team level, the LHDs rated their own individual research skills as adequate. Four of the seven LHDs (LHDs 4, 5, 6, and 7) and rural overall rated their individual skill level as higher than the organisational support which indicates that their research interests and enthusiasm persist in spite of the levels of organisational and team support. Of the other studies using the same tool, only Elphinston (2015) reported similar patterns with psychologists. One of the respondents even described their motivator to do research as "fun", another "It is something I am passionate about". LHD 3 rated well in comparison to the other LHDs in terms of organisational support, however scores lower in individual skills. This suggests that with continued research presence and promotion and building the research culture, this organisation has the potential to flourish.

Individuals are important in the growth of a research culture, however the organisational context in which those individuals work remains fundamental to the development of a research culture (Wilkes & Jackson, 2013). Overall, rural NSW LHD healthcare workers rated their organisations' support for research to be at the lower range of adequate. This is lower than reported in the literature of other studies in metropolitan areas using the same tool (Friesen & Comino, 2016; Holden, Pager, Golenko, Ware, et al., 2012; C. Williams et al., 2015). The sentiment that metropolitan healthcare centres provide a greater level of research support than rural was found to be a common theme summarised in these two responses:

Research tends to be focused in metro centres, while rural areas struggle with very specific problems. However, there are few incentives for research to occur in rural areas that I can see and due to this, there is a general apathy in rural areas to engage in research.

Move to a metro LHD if you want a career in research!

Clinicians rely on evidence to provide the best care to patients. Evidence based practice is the combination of the best available evidence from systematic research combined with clinical expertise (C. M. Williams & Lazzarini, 2015). With this in mind, it is encouraging that this survey found that items relevant to the searching and appraisal of research findings to provide evidence based practice rated adequate at both the organisational and individual level. These results are consistent with the findings in other healthcare professionals using the same tool (Friesen & Comino, 2016; Holden, Pager, Golenko, & Ware, 2012; Holden, Pager, Golenko, Ware, et al., 2012; Howard et al., 2013; Lazzarini et al., 2013; C. M. Williams & Lazzarini, 2015).

The number of respondents selecting 'Unsure' for items within the Organisational Domain and/or the Team Domain indicates that there are significant numbers of staff who are either not aware at all of research or may have not given enough thought to the survey. The frequency of 'Unsure' in this study was higher than those on a previous study, however the items scoring those highest numbers of 'Unsure' in the organisational domain were exactly the same – accessing external funding and having software to support research (Elphinston & Pager, 2015). On a positive note, this survey prompted staff to think about research in their organisation, summed up by these two separate comments:

Didn't realise how little I knew about my LHD's research interest and capacity until reading these questions.

This survey has now prompted me to find out the answers that I am unsure of. Am very interested in undertaking research.

Barriers and Motivators

The barriers identified in this study by rural NSW LHD employees display a consistency across all organisations. The top five barriers identified across the LHDs and the percentage of respondents were:

- Other work takes priority (77%),
- Lack of Time (72%),
- Lack of Funds (55%),
- No Backfill (50%) and
- Lack of administrative support (49%).

The lack of funds and administrative support relates directly to the perceptions of organisational support with items relating to this scoring less than adequate. These findings mirror those found in the literature (Friesen & Comino, 2016; Lazzarini et al., 2013; Pager et al., 2012; C. M. Williams & Lazzarini, 2015).

Motivators to participate in research activities also displayed a uniformity across all LHDs. The top motivators match those observed in earlier studies being to develop skills and an increase in job satisfaction. These results supports Pager's (2012) theory that barriers are more likely to be extrinsic factors, or those external to the individual and the motivators are more intrinsic to the individual.

The Rural Context

Building research capacity in rural LHDs is currently generating a lot of attention (NSW Ministry of Health, 2014; NSW Ministry of Health, 2014). The data from this study may be used to measure

research capacity building strategies currently planned or in progress. The interest is also evident at the individual level from the responses of participants expressing gratitude for this project:

Thank you for this research - it is a valuable area requiring attention and encouragement

Another notable plea was the need to do relevant research from passionate rural healthcare workers:

Please provide opportunities specific to the rural health context. Without it, we won't move ahead to gain experience or research rurally relevant questions.

Two published papers have reported differences in metropolitan and rural perceptions in research capacity using the RCC. Williams et al (2015) compared the findings of Victorian rural with metropolitan allied health workforce and found that a metropolitan location consistently had a positive effect on perceptions of research capacity across all three domains. However, the samples sizes were not equally distributed (n=520, 83% metropolitan). Howard (2013) reported similar findings that there was a greater level of support at the team level for Metropolitan-based dietetic departments than their rural counterparts. Again, the samples were skewed with 68% (n=130) of respondents being from metropolitan centres. This indicates that further research is required to look at the differences between the two regions using larger sample sizes to reflect the proportions in the real world situation.

Study Strengths and Limitations

Study Strengths

This research is the largest study of the current published literature examining research capacity and culture in the rural healthcare workforce in Australia covering seven NSW LHDs. The results of this research may be used in future studies to evaluate research capacity building programs as well as informing the strategic development of research in those organisations. This project has received strong support from the rural NSW LHD Chief Executives as it aligns with the Rural and Remote Research Hub Project currently being undertaken.

Limitations

A limitation of this project is the self-selection bias of participants. It is recognised that participants who have an interest in research will be more likely to complete the survey and therefore limiting the generalisability of the results. Furthermore, it is not possible to ascertain the participation rate as the number of emails distributed, read and declined is not available resulting in limited capability to understand who did not participate. The format of the promotion of the research and the format of the survey may also have factored into participation rates. This project was only promoted via email therefore only those who read their emails had the opportunity to participate. Likewise, the survey was only delivered in an online format and therefore if internet access was an issue (which is not uncommon in rural areas), lack of available computers or the respondent needed to be able to come back to complete the survey at a later time, this was not available. Future research would need to take these factors into consideration and should be promoted by flyers in staff tea rooms and department noticeboards with paper surveys an option to be completed. Therefore, interpretations of the generalisability of the data should be made with caution.

Additionally, care should be taken in the comparison of the data obtained from this study with the published literature using the same tool due to the differences in the scale used. Confident and direct comparisons of scores may only be made within this study or any future studies using the same scale.

Conclusion

The aim of the present research was to examine the perceptions of research capacity of public rural healthcare workers (HCW) in NSW. The results of this research found that rural HCW perceive their individual skills and organisational support for research to be adequate and the team level of support to be less than adequate. This suggests that all levels need to be engaged to support and enable a multi-level approach (both top-down and bottom-up) to research capacity building strategies with particular attention focused at the team level. The barriers and motivators for research are consistent with those found in the literature.

Further Research / Recommendations

This research provides an understanding of the perceived research capacity of rural NSW healthcare workers.

Recommendations include:

1. There needs to be a focus on facilitating and enabling team level support for research within organisations. Strategies may include providing research education and empowerment.
2. Research capacity building strategies should be top-down and bottom-up. Executive should provide the resources and infrastructure with input from staff at the 'coal-face' to enable staff to participate in research activities.
3. Research capacity building interventions should be evaluated using a relevant and validated and framework. Evaluation methods should be identified before the intervention is implemented.

Further research includes:

1. An examination of the actual research capacity of the organisations and whether this compares to the perceptions of staff obtained from this research. A disparity between the two may suggest increased promotion of capabilities as required.
2. Understand the facilitators and enablers of a research culture in public health organisations.
3. This study duplicated in metropolitan LHDs to examine if the differences as voiced by respondents are founded.

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Appendix 1 – Publications using the Research Capacity and Culture Tool

Notes: The Research Capacity and Culture Tool was validated using a 10 point likert plus 'Unsure'. The original version had 55 items (20 organisational, 20 team and 15 individual domain items), however subsequent versions have 51 items (18 organisational, 19 team and 14 individual domain items).

Author & Title	Aim / Outcomes/ Hypothesis	Population, Participants & Findings	Tool (number of items and scale) and reporting
Williams and Lazzarini (2015) <i>The research capacity and culture of Australian podiatrists</i>	To investigate the research capacity and culture of the podiatry profession within Australia and determine if there were any differences between podiatrists working in different health sectors and workplaces	Population: Registered Australian podiatrists Participants: n = 232 (6 % of population) Podiatrists in Australia report similar low levels of research success or skill to those reported in other allied health professions. The workplace setting and health sector seem to play key roles in self-reported research success and skills.	Version = 51 items Scale = 10 point, 'Unsure' removed without explanation Medians and interquartile ranges reported
Williams, Miyazaki et al (2015) <i>Research capacity and culture of the Victorian public health allied health workforce is influenced by key research support staff and location</i>	To understand whether the demographics of the allied health workforce, the location of a health service or the presence of a research lead affect the self- rated capacity and culture of the allied health workforce to undertake research	Population: All Victorian public health and allied health departments Allied health workforce only Participants: n=520 fully completed surveys The findings of this study suggest that having an organisational research lead consistently had a beneficial effect at the team and organisational level, but not at an individual level.	Version = 51 items Scale = 10 point, 'Unsure' removed without explanation Medians and interquartile ranges calculated but not reported
Pager, Holden, Golenko (2012) <i>Motivators, enablers, and barriers to building allied health research capacity.</i>	To develop a better understanding of how motivators, enablers, and barriers impact on research for allied health in health care settings; to increase understanding of the factors	Population: Multidisciplinary allied health professionals in Primary Healthcare teams in Queensland Health Participants: n=85 from 10 teams	Only reported the enablers and barriers to research – not validated components of the RCC survey

Author & Title	Aim / Outcomes/ Hypothesis	Population, Participants & Findings	Tool (number of items and scale) and reporting
	influencing individual allied health professionals (AHPs) to do research and factors influencing allied health teams to do research.	AHPs are more likely to report being motivated to do research by intrinsic factors and the barriers identified are more likely to be extrinsic factors. The findings were consistent with the published literature.	
Lazzarini, et al (2013) <i>Research capacity and culture in podiatry: early observations within Queensland health</i>	To report the research capacity levels of statewide populations of public-sector podiatrists at baseline and twelve-months.	Population: Queensland Health podiatrists in Jan 2011 (n=58) and Jan 2012 (n=60) Participants: 2011 survey n=37 (64%), 2012 survey n=33 (62%) (participant surveys over the 2 time periods were not paired) This articles reports on data from a larger longitudinal study which will be conducted over 4 years. 2012 survey has a higher perceived skills and support to initiate research coinciding with the implementation of RCB strategies.	Version = 54 items (20 organisational and 20 team items, however 14 individual items) Scale = 10 point, no mention of 'Unsure' Medians and interquartile ranges reported
Howard et al (2013) <i>Involvement in research activities and factors influencing research capacity among dietitians.</i>	To investigate research capacity at the individual and department level among the nutrition and dietetics workforce in Queensland, Australia.	Population: Queensland dietitians and nutritionists (n=400) Participants: n = 160 (40%) Health professional level, proportion of role (FTE) designated to research and years of experience in nutrition and dietetics were significantly and positively associated with the number of research activities involved in (P < 0.05).	Version = 51 items Scale = 10 point, no mention of 'Unsure' Means and standard deviations of items reported
Elphinston, Pager (2015)	To investigate the research capacity and current research activity among psychologists working in clinical roles in a	Population: Psychologists working in clinical roles in a large metropolitan public health setting in Queensland Participants:	Version = 51 items Scale = 10 point, plus 'Unsure' Overall domain means and standard deviation reported

Author & Title	Aim / Outcomes/ Hypothesis	Population, Participants & Findings	Tool (number of items and scale) and reporting
Untapped Potential: Psychologists leading research in clinical practice	large metropolitan health setting.	n = 60 The results indicated that psychologists reported relatively high individual research capacity, higher than both team and organisation levels, and greater individual research capacity compared with studies of dietitians and a mixed group of allied health. Finally, barriers and motivators to research activity were similar compared with studies of other allied health professions.	
Friesen, Comino (2016) Research culture and capacity in community health services: results of a structures survey of staff	To explore the current research culture and capacity in the Division of Community Health (DCH) with thin the South Western Sydney Local Health District (SWSLHD).	Population: Community based multidisciplinary and multi-professional healthcare workers in SWSLHD Participants: n = 109 (~26% response rate) - Nurses 71 - Social work 15 - Occupational therapy 9 - Speech pathology 5 - Other 5 Overall, the study describes low levels of perceived support for research at the organisational level, and moderate levels within teams. A significant proportion of participants were unsure of organisational- and team-level capacity, and approximately one-third was unsure if research was a requirement of their role	Version = 55 items Scale = 10 point, plus 'Unsure' Overall domain means and standard deviation reported
Holden, Pager et al (2012) Validation of the RCC tool: measuring RCC at individual, team and organisation levels	Evaluate the validity and reliability of the RCC tool; measure research skill and culture of AHPs	Population: Allied Health workers (AHW) SE Qld in government primary health care Participants: N = 134 134 AHPs utilised to test internal consistency of RCC tool; test-retest reliability of the RCC tool conducted on a separate sample of 50 AHP. Paper describes the development of the RCC using AHW and focuses on the validation of such (internal consistency, test-retest reliability)	Version = 55 items Scale = 10 point, no mention of 'Unsure' Medians and interquartile ranges reported

Author & Title	Aim / Outcomes/ Hypothesis	Population, Participants & Findings	Tool (number of items and scale) and reporting
<p>(Holden, Pager, Golenko, Ware, et al., 2012) <i>Evaluating a team-based approach to research capacity building using a matched-pairs study design</i></p>	<p>Evaluate the impact of research capacity building initiatives at a team level</p>	<p>Population: Primary health multi-disciplinary allied health teams in Queensland (one organisation)</p> <p>Participants: Controls n = 32 Interventions n = 37</p> <p>A non-randomised matched-pair trial design to compare the impact of a multi-strategy research capacity building intervention (4 intervention teams and 4 control teams).</p>	<p>Version = 55 items Scale = 10 point, no mention of 'Unsure' Mean and interquartile ranges reported for overall domain scores</p>
<p>(Luckson, 2015) <i>Exploring the research culture of nurses and allied health professionals (AHPS) in a research focused and a non-research focused healthcare organisation in the UK (PhD Thesis)</i></p>		<p>Population: Nurses and Allied Health professionals from 2 hospitals (research focused and non-research focused in the UK)</p> <p>Participants: Total respondents = 224 (Research focused n = 144, non-research focused n = 80)</p>	<p>Version = 51 items Scale = 10 point, plus 'Unsure' Mean and standard deviation reported Considered mean=5 to be adequate, >5 more than adequate, <5 less than adequate</p>

Appendix 2 – The Research Capacity and Culture Tool (Modified)

ORGANISATION LEVEL

1. Please select your organisation (drop-down box of Rural NSW LHDs, including 'Other')
2. Please rate your organisation's success or skill level for each of the following aspects (1=no success/skill and 9=highest possible success/skill)

i) has adequate resources to support staff research training	1...2...3...4...5...6...7...8...9	unsure
ii) has funds, equipment or admin to support research activities	1...2...3...4...5...6...7...8...9	unsure
iii) has a plan or policy for research development	1...2...3...4...5...6...7...8...9	unsure
iv) has senior managers that support research	1...2...3...4...5...6...7...8...9	unsure
v) ensures staff career pathways are available in research	1...2...3...4...5...6...7...8...9	unsure
vi) ensures organisation planning is guided by evidence	1...2...3...4...5...6...7...8...9	unsure
vii) has consumers involved in research	1...2...3...4...5...6...7...8...9	unsure
viii) accesses external funding for research	1...2...3...4...5...6...7...8...9	unsure
ix) promotes clinical practice based on evidence	1...2...3...4...5...6...7...8...9	unsure
x) encourages research activities relevant to practice	1...2...3...4...5...6...7...8...9	unsure
xi) has software programs for analysing research data	1...2...3...4...5...6...7...8...9	unsure
xii) has mechanisms to monitor research quality	1...2...3...4...5...6...7...8...9	unsure
xiii) has identified experts accessible for research advice	1...2...3...4...5...6...7...8...9	unsure
xiv) supports a multi-disciplinary approach to research	1...2...3...4...5...6...7...8...9	unsure
xv) has regular forums/bulletins to present research findings	1...2...3...4...5...6...7...8...9	unsure
xvi) engages external partners (eg universities) in research	1...2...3...4...5...6...7...8...9	unsure
xvii) supports applications for research scholarships/ degrees	1...2...3...4...5...6...7...8...9	unsure
xviii) supports the peer-reviewed publication of research	1...2...3...4...5...6...7...8...9	unsure

1. Please comment on any of the above issues indicating the item you are commenting on.

TEAM LEVEL

3. Please rate your team's current success or skill level for each of the following aspects (1=no success/skill and 9=highest possible success/skill)

i) has adequate resources to support staff research training	1...2...3...4...5...6...7...8...9	unsure
ii) has funds, equipment or admin to support research activities	1...2...3...4...5...6...7...8...9	unsure
iii) does team level planning for research development	1...2...3...4...5...6...7...8...9	unsure
iv) ensures staff involvement in developing that plan	1...2...3...4...5...6...7...8...9	unsure

v) has team leaders that support research	1...2...3...4...5...6...7...8...9	unsure
vi) provides opportunities to get involved in research	1...2...3...4...5...6...7...8...9	unsure
vii) does planning that is guided by evidence	1...2...3...4...5...6...7...8...9	unsure
viii) has consumer involvement in research activities/planning	1...2...3...4...5...6...7...8...9	unsure
ix) has applied for external funding for research	1...2...3...4...5...6...7...8...9	unsure
x) conducts research activities relevant to practice	1...2...3...4...5...6...7...8...9	unsure
xi) supports applications for research scholarships/ degrees	1...2...3...4...5...6...7...8...9	unsure
xii) has mechanisms to monitor research quality	1...2...3...4...5...6...7...8...9	unsure
xiii) has identified experts accessible for research advice	1...2...3...4...5...6...7...8...9	unsure
xiv) disseminates research results at research forums/seminars	1...2...3...4...5...6...7...8...9	unsure
xv) supports a multi-disciplinary approach to research	1...2...3...4...5...6...7...8...9	unsure
xvi) has incentives & support for mentoring activities	1...2...3...4...5...6...7...8...9	unsure
xvii) has external partners (eg universities) engaged in research	1...2...3...4...5...6...7...8...9	unsure
xviii) supports peer-reviewed publication of research	1...2...3...4...5...6...7...8...9	unsure
xix) has software available to support research activities	1...2...3...4...5...6...7...8...9	unsure

4. What are the biggest barriers to research in your team?
5. What are the biggest motivators to research in your team?
6. If you are part of more than one team please discuss how the characteristics of the other teams or your role in these teams impact on your ability to do research.

INDIVIDUAL LEVEL

7. Please rate your own current success or skill level for each of the following aspects (1=no success/skill and 9=highest possible success/skill)

i) Finding relevant literature	1...2...3...4...5...6...7...8...9	unsure
iii) Critically reviewing the literature	1...2...3...4...5...6...7...8...9	unsure
iii) Using a computer referencing system (eg Endnote)	1...2...3...4...5...6...7...8...9	unsure
iv) Writing a research protocol	1...2...3...4...5...6...7...8...9	unsure
v) Securing research funding	1...2...3...4...5...6...7...8...9	unsure
vi) Submitting an ethics application	1...2...3...4...5...6...7...8...9	unsure
vii) Designing questionnaires	1...2...3...4...5...6...7...8...9	unsure
viii) Collecting data e.g. surveys, interviews	1...2...3...4...5...6...7...8...9	unsure
ix) Using computer data management systems	1...2...3...4...5...6...7...8...9	unsure
x) Analysing qualitative research data	1...2...3...4...5...6...7...8...9	unsure

xi) Analysing quantitative research data	1...2...3...4...5...6...7...8...9	unsure
xii) Writing a research report	1...2...3...4...5...6...7...8...9	unsure
xiii) Writing for publication in peer-reviewed journals	1...2...3...4...5...6...7...8...9	unsure
xiv) Providing advice to less experienced researchers	1...2...3...4...5...6...7...8...9	unsure

8. Please indicate any research activity you are currently involved with. Tick (✓) as many as apply

<input type="checkbox"/> Writing a research report, presentation or paper for publication <input type="checkbox"/> Writing a research protocol <input type="checkbox"/> Submitting an ethics application <input type="checkbox"/> Collecting data eg surveys, interviews <input type="checkbox"/> Analysing qualitative research data <input type="checkbox"/> Analysing quantitative research data <input type="checkbox"/> Writing a literature review <input type="checkbox"/> Applying for research funding <input type="checkbox"/> Not currently involved with research <input type="checkbox"/> Other _____

9. Please state whether research related activities are part of your role description

- Yes
- No

If yes, what provisions are made for you to conduct research as part of your role? Tick (✓) as many as apply

<input type="checkbox"/> Software <input type="checkbox"/> Research supervision <input type="checkbox"/> Time <input type="checkbox"/> Research funds	<input type="checkbox"/> Administrative support <input type="checkbox"/> Training <input type="checkbox"/> Library access <input type="checkbox"/> Other _____
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10. Please indicate if you have completed any of the following research activities in the past 12 months. Tick (✓) as many as apply

<input type="checkbox"/> Secured research funding <input type="checkbox"/> Co-authored a paper for publication <input type="checkbox"/> Presented research findings at a conference <input type="checkbox"/> No research activity completed in the past 12 months <input type="checkbox"/> Other _____
--

11. What are the barriers to research for you personally? Tick (✓) as many as apply

<input type="checkbox"/> Lack of time for research <input type="checkbox"/> Lack of suitable backfill <input type="checkbox"/> Other work roles take priority <input type="checkbox"/> Lack of funds for research <input type="checkbox"/> Lack of support from management <input type="checkbox"/> Lack access to equipment for research <input type="checkbox"/> Lack of administrative support <input type="checkbox"/> Lack of software for research <input type="checkbox"/> Isolation	<input type="checkbox"/> Lack of library/internet access <input type="checkbox"/> Not interested in research <input type="checkbox"/> Other personal commitments <input type="checkbox"/> Desire for work / life balance <input type="checkbox"/> Lack of a co-ordinated approach to research <input type="checkbox"/> Lack of skills for research <input type="checkbox"/> Intimidated by research language <input type="checkbox"/> Intimidated by fear of getting it wrong <input type="checkbox"/> Other _____
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12. What are the motivators to do research for you personally? Tick (✓) as many as apply

<input type="checkbox"/> To develop skills <input type="checkbox"/> Career advancement <input type="checkbox"/> Increased job satisfaction <input type="checkbox"/> Study or research scholarships available <input type="checkbox"/> Dedicated time for research <input type="checkbox"/> Research written into role description <input type="checkbox"/> Colleagues doing research <input type="checkbox"/> Mentors available to supervise <input type="checkbox"/> Research encouraged by managers	<input type="checkbox"/> Grant funds <input type="checkbox"/> Links to universities <input type="checkbox"/> Forms part of Post Graduate study <input type="checkbox"/> Opportunities to participate at own level <input type="checkbox"/> Problem identified that needs changing <input type="checkbox"/> Desire to prove a theory / hunch <input type="checkbox"/> To keep the brain stimulated <input type="checkbox"/> Increased credibility <input type="checkbox"/> Other _____
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About You

13. **What is your age?** (Options are: Under 20, 20 – 29, 30 – 39, 40 – 49, 50 – 60, Over 60)

14. **How long have you been working in the health industry?** (Options are: Less than 5 years, 5 – 10 years, Over 10 years)

15. **How long have you been working at your current organisation?** (Options are: Less than 1 year, 1 – 5 years, Over 5 years)

16. **Please describe the profession that best describes your current role.** (Options are Medical Officer, Nursing, Midwife, Allied Health, Health Service Manager, Administration, Other (specify). Logic is applied to Medical Officer, Nursing, Midwife and Allied Health to obtain further detail eg Clinical Nurse Consultant vs Registered Nurse vs Student Nurse)

17. Please indicate your professional qualifications

<input type="checkbox"/> Certificate <input type="checkbox"/> Undergraduate <input type="checkbox"/> Postgraduate <input type="checkbox"/> PhD

Other

18. Are you currently enrolled in any higher degree study or other professional development related to research?

- Yes
 No

If yes, please indicate what level of study you are enrolled in

- Certificate
 Undergraduate
 Postgraduate
 PhD
 HETI RRCBP
 Other

NB: Questions 20 and 21 have been added by the Investigator.

19. **With respect to your *ability to participate in research activities only*, please rate your own views for the following question**
(1=no intention and 9=highest possible intention)

i) What is your intention to leave your current LHD within the next 12 months?	1...2...3...4...5...6...7...8...9	N/A
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Please feel free to comment...

20. **With respect to your *ability to participate in research activities only*, please rate your own views for the following question**
(1= satisfaction and 9=highest possible satisfaction)

ii) How satisfied are you with your current role?	1...2...3...4...5...6...7...8...9	N/A
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Please feel free to comment...

21. Please feel free to provide any additional comments you may have regarding research in rural NSW LHDs

Appendix 3 – ‘Unsure’ Survey Responses

Table 5 'Unsure' Responses for ALL items of the Domain by LHD (n (% of total responses for that LHD))

LHD	Organisational Domain – ‘Unsure’ n=1014	Team Domain – ‘Unsure’ n=793	Individual Domain – ‘Unsure’ n=713	Organisational and Team Domains – ‘Unsure’	Organisational, Team and Individual Domains – ‘Unsure’
LHD 1	3 (5.6%)	2 (4.9%)	1 (2.8%)	1 (2.4%)	1 (2.8%)
LHD 2	1 (2.9%)	0	0	0	0
LHD 3	5 (2.9%)	4 (2.9%)	0	2 (1.5%)	0
LHD 4	7 (3.2%)	10 (5.9%)	3 (2.0%)	2 (1.2%)	1 (0.7%)
LHD 5	4 (4.9%)	1 (1.4%)	0	1 (1.4%)	0
LHD 6	6 (2.9%)	8 (4.9%)	3 (2.1%)	2 (1.2%)	0
LHD 7	6 (2.5%)	1 (0.5%)	0	1 (0.5%)	0
Total Responses	32(3.2%)	26 (3.3%)	7 (1.0%)	9^Ψ	2^Ψ

Ψ Percentage unable to be calculated as the number of responses in each domain is not equal

Table 6 Total number of 'Unsure' responses for each item of the Organisational Domain

Organisational Research Skill Statement	“UNSURE” responses n (% of total responses - 1014)
Has adequate resources to support staff research training	150 (14.8%)
Has funds, equipment or admin to support research activities	181 (17.9%)
Has a plan or policy for research development	281 (27.7%)
Has senior managers that support research	177 (17.5%)
Ensures staff career pathways are available in research	215 (21.2%)
Ensures organisation planning is guided by evidence	142 (14.0%)
Has consumers involved in research	254 (25.0%)
Accesses external funding for research	304 (30.0%)
Promotes clinical practice based on evidence	82 (8.1%)
Encourages research activities relevant to practice	140 (13.8%)
Has software programs for analysing research data	370 (36.5%)
Has mechanisms to monitor research quality	310 (30.6%)
Has identified experts accessible for research advice	255 (25.1%)
Supports a multi-disciplinary approach to research	225 (22.2%)
Has regular forums/bulletins to present research findings	188 (18.5%)
Engages external partners (eg universities) in research	233 (23.0%)
Supports applications for research scholarships/ degrees	223 (22.0%)
Supports the peer-reviewed publication of research	264 (26.0%)

Table 7 Total number of 'Unsure' responses for each item of the Team Domain

Team Research Skill	"UNSURE" responses n (% of total responses - 793)
Has adequate resources to support staff research training	67 (6.6%)
Has funds, equipment or admin to support research activities	83 (8.2%)
Does team level planning for research development	74 (7.3%)
Ensures staff involvement in developing that plan	75 (7.4%)
Has team leaders that support research	66 (6.5%)
Provides opportunities to get involved in research	58 (5.7%)
Does planning that is guided by evidence	76 (7.5%)
Has consumer involvement in research activities/planning	121 (11.9%)
Has applied for external funding for research	182 (17.9%)
Conducts research activities relevant to practice	97 (9.6%)
Supports applications for research scholarships/ degrees	132 (13.0%)
Has mechanisms to monitor research quality	148 (14.6%)
Has identified experts accessible for research advice	117 (11.5%)
Disseminates research results at research forums/seminars	102 (10.1%)
Supports a multi-disciplinary approach to research	105 (10.4%)
Has incentives & support for mentoring activities	88 (8.7%)
Has external partners (eg universities) engaged in research	139 (13.7%)
Supports peer-reviewed publication of research	138 (13.6%)
Has software available to support research activities	183 (18.0%)

Table 8 Total number of 'Unsure' responses for each item of the Individual Domain

Individual Skill	"UNSURE" responses n (% of total responses - 713)
Finding relevant literature	7 (0.7%)
Critically reviewing the literature	12 (1.2%)
Using a computer referencing system (eg Endnote)	23 (2.3%)
Writing a research protocol	30 (3%)
Securing research funding	47 (4.6%)
Submitting an ethics application	42 (4.1%)
Designing questionnaires	18 (1.8%)
Collecting data e.g. surveys, interviews	18 (1.8%)
Using computer data management systems	17 (2.7%)
Analysing qualitative research data	22 (2.2%)
Analysing quantitative research data	18 (1.8%)
Writing a research report	19 (1.9%)
Writing for publication in peer-reviewed journals	37 (3.6%)
Providing advice to less experienced researchers	29 (2.9%)

Appendix 4 – Participant Demographics

Table 9 Demographics (Age, Working history) by Local Health District

	All LHDs n = 697 (%)	LHD 1 n = 35 (%)	LHD 2 n = 24 (%)	LHD 3 n = 119 (%)	LHD 4 n = 145 (%)	LHD 5 n = 63 (%)	LHD 6 n = 143 (%)	LHD 7 n = 168 (%)
Age Group								
Under 20 years' old	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
20 - 29 years' old	47 (6.7%)	3 (8.6%)	1 (4.2%)	4 (3.4%)	13 (9%)	3 (4.8%)	3 (2.1%)	20 (11.9%)
30 - 39 years' old	111 (15.9%)	5 (14.3%)	4 (16.7%)	18 (15.1%)	30 (20.7%)	7 (11.1%)	20 (14%)	27 (16.1%)
40 - 49 years' old	194 (27.8%)	7 (20%)	5 (20.8%)	44 (37%)	32 (22.1%)	18 (28.6%)	40 (28%)	48 (28.6%)
50 - 60 years' old	270 (38.7%)	15 (42.9%)	9 (37.5%)	43 (36.1%)	54 (37.2%)	27 (42.9%)	64 (44.8%)	58 (34.5%)
Over 60 years' old	75 (10.8%)	5 (14.3%)	5 (20.8%)	10 (8.4%)	16 (11%)	8 (12.7%)	16 (11.2%)	15 (8.9%)
Working in Health								
Less than 5 years	73 (10.5%)	4 (11.4%)	4 (16.7%)	11 (9.2%)	16 (11%)	1 (1.6%)	11 (7.7%)	26 (15.5%)
5 - 10 years	91 (13.1%)	6 (17.1%)	1 (4.2%)	12 (10.1%)	28 (19.3%)	7 (11.1%)	17 (11.9%)	20 (11.9%)
More than 10 years	533 (76.5%)	25 (71.4%)	19 (79.2%)	96 (80.7%)	101 (69.7%)	55 (87.3%)	115 (80.4%)	122 (72.6%)
Current Organisation								
Less than 1 year	75 (10.8%)	4 (11.4%)	2 (8.3%)	16 (13.4%)	18 (12.4%)	5 (7.9%)	13 (9.1%)	17 (10.1%)
1 - 5 years	192 (27.5%)	14 (40%)	5 (20.8%)	24 (20.2%)	42 (29%)	9 (14.3%)	42 (29.4%)	56 (33.3%)
More than 5 years	430 (61.7%)	17 (48.6%)	17 (70.8%)	79 (66.4%)	85 (58.6%)	49 (77.8%)	88 (61.5%)	95 (56.5%)
Educational Qualification								
Certificate	117 (16.9%)	3 (8.6%)	3 (12.5%)	18 (15.1%)	30 (20.7%)	4 (6.3%)	29 (20.4%)	30 (18.1%)
Undergraduate	128 (18.4%)	4 (11.4%)	4 (16.7%)	25 (21%)	24 (16.6%)	12 (19%)	24 (16.9%)	35 (21.1%)
Postgraduate	422 (60.8%)	24 (68.6%)	14 (58.3%)	73 (61.3%)	87 (60%)	43 (68.3%)	86 (60.6%)	95 (57.2%)
PhD	12 (1.7%)	0 (0%)	3 (12.5%)	3 (2.5%)	1 (0.7%)	3 (4.8%)	1 (0.7%)	1 (0.6%)
Hospital based nursing training	6 (0.9%)	3 (8.6%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (1.8%)
Diploma/Advanced Diploma	5 (0.7%)	0 (0%)	0 (0%)	0 (0%)	2 (1.4%)	1 (1.6%)	1 (0.7%)	1 (0.6%)
Not Listed	4 (0.6%)	1 (2.9%)	0 (0%)	0 (0%)	1 (0.7%)	0 (0%)	1 (0.7%)	1 (0.6%)
Research included in the Position Description								
Included	213 (29.9%)	13 (36.1%)	9 (36%)	46 (37.7%)	37 (25%)	18 (27.7%)	32 (21.9%)	58 (33.9%)
Not Included	500 (70.2%)	23 (63.9%)	16 (64%)	76 (62.3%)	111 (75.0%)	47 (72.3%)	114 (78.1%)	113 (66.1%)

Table 10 Profession of Respondents by Local Health District

Profession	All LHDs n = 694 (%)	LHD 1 n = 35 (%)	LHD 2 n = 24 (%)	LHD 3 n = 119 (%)	LHD 4 n = 145 (%)	LHD 5 n = 63 (%)	LHD 6 n = 142 (%)	LHD 7 n = 166 (%)
Medical Officer (includes Medical Student)	37 (5.3%)	1 (2.9%)	4 (16.7%)	5 (4.2%)	7 (4.8%)	2 (3.2%)	2 (1.4%)	16 (9.5%)
Nursing	304 (43.6%)	14 (40%)	8 (33.3%)	49 (41.2%)	68 (46.9%)	27 (42.9%)	65 (45.5%)	73 (43.5%)
Midwife	26 (3.7%)	2 (5.7%)	0 (0%)	5 (4.2%)	5 (3.4%)	2 (3.2%)	7 (4.9%)	5 (3%)
Allied Health	179 (25.7%)	6 (17.1%)	10 (41.7%)	33 (27.7%)	37 (25.5%)	18 (28.6%)	36 (25.2%)	39 (23.2%)
Health Service Manager	56 (8.0%)	4 (11.4%)	1 (4.2%)	12 (10.1%)	10 (6.9%)	6 (9.5%)	12 (8.4%)	11 (6.5%)
Administration	39 (5.6%)	2 (5.7%)	0 (0%)	5 (4.2%)	9 (6.2%)	3 (4.8%)	9 (6.3%)	11 (6.5%)
Hospital Executive	8 (1.1%)	5 (14.3%)	0 (0%)	2 (1.7%)	0 (0%)	0 (0%)	1 (0.7%)	0 (0%)
Other	12 (1.7%)	0 (0%)	0 (0%)	2 (1.7%)	2 (1.4%)	2 (3.2%)	3 (2.1%)	3 (1.8%)
Aboriginal Health Worker	5 (0.7%)	0 (0%)	0 (0%)	0 (0%)	1 (0.7%)	1 (1.6%)	2 (1.4%)	1 (0.6%)
Health Education	3 (0.4%)	0 (0%)	0 (0%)	0 (0%)	1 (0.7%)	1 (1.6%)	0 (0%)	1 (0.6%)
Hotel services/ Maintenance	9 (1.3%)	1 (2.9%)	0 (0%)	2 (1.7%)	0 (0%)	0 (0%)	2 (1.4%)	4 (2.4%)
Health Promotion	5 (0.7%)	0 (0%)	0 (0%)	2 (1.7%)	2 (1.4%)	0 (0%)	1 (0.7%)	0 (0%)
Prefer not to say / did not answer	10 (1.4%)	0 (0%)	0 (0%)	2 (1.7%)	1 (0.7%)	1 (1.6%)	2 (1.4%)	4 (2.4%)
Clinical Governance role	4 (0.6%)	0 (0%)	1 (4.2%)	0 (0%)	2 (1.4%)	0 (0%)	1 (0.7%)	0 (0%)

Appendix 5 – Organisational Domain

Table 11 Organisational Domain Ranked by Overall Score (mean (rescaled mean))

Organisational Research Skill Statement	ALL (n=1014)	LHD 1 (n=54)	LHD 2 (n=34)	LHD 3 (n=175)	LHD 4 (n=219)	LHD 5 (n=82)	LHD 6 (n=206)	LHD 7 (n=244)
Promotes clinical practice based on evidence	5.4 (6)	6.2 (6.9)	6.1 (6.8)	5.5 (6.2)	5.3 (5.9)	5.4 (6)	5.7 (6.4)	5 (5.5)
Ensures organisation planning is guided by evidence	4.3 (4.8)	4.7 (5.2)	5.1 (5.6)	4.5 (5.1)	4.3 (4.8)	4.1 (4.5)	4.4 (4.9)	4 (4.5)
Has senior managers that support research	3.9 (4.4)	4.9 (5.4)	5 (5.6)	4.4 (4.9)	4 (4.4)	3.4 (3.8)	3.9 (4.3)	3.5 (3.9)
Encourages research activities relevant to practice	3.9 (4.4)	4.9 (5.4)	4.4 (4.9)	4.6 (5.1)	4 (4.5)	3.5 (3.9)	3.7 (4.1)	3.5 (3.9)
Engages external partners (eg universities) in research	3.7 (4.1)	6.1 (6.8)	4.2 (4.7)	4.8 (5.3)	3.5 (3.9)	3.7 (4.1)	2.9 (3.2)	3.3 (3.7)
Supports applications for research scholarships/ degrees	3.7 (4.1)	4.7 (5.3)	4.8 (5.3)	4.2 (4.7)	3.6 (4)	3.5 (3.9)	3.5 (3.9)	3.3 (3.6)
Has adequate resources to support staff research training	3.7 (4.1)	4.5 (5)	3.7 (4.1)	4.2 (4.7)	3.6 (4)	3.4 (3.7)	3.8 (4.2)	3.3 (3.7)
Supports a multi-disciplinary approach to research	3.6 (4)	4.6 (5.1)	3.7 (4.1)	4.2 (4.6)	3.5 (3.9)	3.3 (3.6)	3.6 (4)	3.2 (3.6)
Supports the peer-reviewed publication of research	3.5 (3.9)	4.2 (4.6)	4.4 (4.9)	4.1 (4.6)	3.3 (3.7)	3.1 (3.5)	3.4 (3.8)	3.3 (3.6)
Has consumers involved in research	3.4 (3.8)	3.9 (4.3)	3.6 (4)	3.7 (4.2)	3.4 (3.8)	3.3 (3.7)	3.5 (3.9)	3.2 (3.6)
Has identified experts accessible for research advice	3.4 (3.8)	4.5 (5)	3.6 (4)	4.5 (4.9)	3.3 (3.6)	3.2 (3.6)	3.2 (3.5)	3 (3.4)
Accesses external funding for research	3.4 (3.8)	4.5 (5)	3.6 (4)	4.1 (4.6)	3.2 (3.5)	2.8 (3.1)	3.5 (3.9)	3.1 (3.5)
Has a plan or policy for research development	3.3 (3.7)	3.7 (4.1)	3.6 (4)	4 (4.5)	3.2 (3.6)	3.1 (3.4)	3.3 (3.7)	3.1 (3.4)
Has regular forums/bulletins to present research findings	3.2 (3.6)	3.4 (3.8)	3.7 (4.1)	4.8 (5.3)	2.9 (3.2)	2.9 (3.2)	2.8 (3.1)	2.9 (3.2)
Has mechanisms to monitor research quality	3.2 (3.5)	3.9 (4.3)	3.3 (3.7)	3.7 (4.1)	3.2 (3.5)	3 (3.3)	3 (3.3)	2.9 (3.3)
Ensures staff career pathways are available in research	3 (3.3)	3.6 (4)	3.5 (3.9)	3.2 (3.6)	3 (3.3)	2.5 (2.7)	3.1 (3.4)	2.7 (3)
Has software programs for analysing research data	2.9 (3.3)	3.7 (4.2)	3 (3.3)	3.1 (3.5)	3.1 (3.4)	3.2 (3.5)	2.9 (3.2)	2.6 (2.9)
Has funds, equipment or admin to support research activities	2.9 (3.3)	3.8 (4.3)	2.6 (2.9)	3.3 (3.7)	3 (3.3)	2.7 (3)	3 (3.3)	2.7 (2.9)
Total Organisational	3.6 (4)	4.4 (4.9)	4 (4.4)	4.2 (4.6)	3.5 (3.9)	3.3 (3.7)	3.5 (3.9)	3.3 (3.6)

Appendix 6 – Team Domain

Table 12 Team Domain Ranked by Overall Score (mean (rescaled mean))

Team Level Research Skill Statement	ALL (n=793)	LHD 1 (n=41)	LHD 2 (n=26)	LHD 3 (n=136)	LHD 4 (n=170)	LHD 5 (n=72)	LHD 6 (n=162)	LHD 7 (n=186)
Provides opportunities to get involved in research	4.2 (4.6)	4.9 (5.5)	4.6 (5.1)	4.5 (5)	4 (4.4)	3.9 (4.3)	4.3 (4.8)	4 (4.4)
Has funds, equipment or administration to support research activities	3.7 (4.1)	4.9 (5.5)	3.7 (4.1)	4 (4.4)	3.7 (4.1)	3 (3.3)	3.8 (4.3)	3.5 (3.9)
Has identified experts accessible for research advice	3.5 (3.9)	4.3 (4.7)	3.5 (3.9)	4 (4.4)	3.3 (3.7)	3.2 (3.5)	3.8 (4.2)	3.1 (3.5)
Has software available to support research activities	3.4 (3.8)	4.5 (5.1)	3.2 (3.5)	3.8 (4.2)	3.3 (3.7)	3 (3.3)	3.5 (3.9)	3.2 (3.6)
Has team leaders that support research	3.3 (3.6)	4.2 (4.7)	3.3 (3.7)	3.9 (4.3)	3.2 (3.6)	2.9 (3.2)	3.1 (3.4)	3.1 (3.4)
Has mechanisms to monitor research quality	3.2 (3.5)	4.5 (5.1)	2.6 (2.9)	4.1 (4.5)	3.2 (3.5)	2.3 (2.6)	2.8 (3.1)	3.1 (3.4)
Has incentives & support for mentoring activities	3.1 (3.5)	4 (4.5)	3 (3.3)	3.7 (4.1)	3.1 (3.4)	2.8 (3.2)	3 (3.4)	2.8 (3.2)
Ensures staff involvement in developing that plan	3.1 (3.5)	4.3 (4.7)	2.5 (2.8)	3.8 (4.2)	3.1 (3.4)	2.6 (2.9)	3.1 (3.4)	2.8 (3.1)
Supports applications for research scholarships/ degrees	3.1 (3.5)	5.5 (6.1)	3.5 (3.9)	3.8 (4.2)	3.2 (3.5)	2.8 (3.1)	2.5 (2.8)	2.8 (3.1)
Has external partners (eg universities) engaged in research	3 (3.4)	4.4 (4.8)	3.2 (3.6)	3.4 (3.8)	2.8 (3.1)	2.6 (2.9)	3.1 (3.5)	2.9 (3.2)
Has consumer involvement in research activities/planning	3 (3.3)	4 (4.4)	2.8 (3.1)	3.1 (3.4)	3 (3.4)	2.5 (2.8)	2.9 (3.2)	2.9 (3.2)
Does planning that is guided by evidence	2.8 (3.2)	3.8 (4.2)	2.6 (2.9)	3 (3.3)	2.8 (3.1)	2.5 (2.8)	2.9 (3.2)	2.8 (3.1)
Has adequate resources to support staff research training	2.8 (3.1)	4 (4.5)	2.8 (3.1)	3.2 (3.6)	2.7 (3)	2.3 (2.6)	2.7 (3)	2.8 (3.1)
Conducts research activities relevant to practice	2.8 (3.1)	3.9 (4.3)	2.3 (2.5)	3.3 (3.7)	2.9 (3.2)	2.5 (2.8)	2.7 (3)	2.5 (2.8)
Disseminates research results at research forums/seminars	2.8 (3.1)	3.5 (3.9)	2.4 (2.6)	3.4 (3.7)	2.7 (3)	2.5 (2.8)	2.6 (2.9)	2.6 (2.9)
Supports peer-reviewed publication of research	2.8 (3.1)	3.9 (4.3)	3 (3.3)	3.3 (3.7)	2.7 (3)	2.5 (2.8)	2.7 (3)	2.5 (2.7)
Supports a multi-disciplinary approach to research	2.6 (2.9)	3.7 (4.1)	2.7 (3)	2.8 (3.1)	2.4 (2.6)	2.2 (2.4)	2.6 (2.9)	2.7 (3)
Does team level planning for research development	2.5 (2.8)	3.7 (4.1)	2.3 (2.5)	2.8 (3.2)	2.4 (2.7)	2.1 (2.4)	2.4 (2.7)	2.3 (2.5)
Has applied for external funding for research	2.4 (2.7)	3.2 (3.5)	2.1 (2.4)	2.7 (3)	2.5 (2.7)	2.3 (2.6)	2.3 (2.5)	2.2 (2.5)
Total Team Domain	3.1 (3.4)	4.2 (4.6)	3 (3.3)	3.5 (3.9)	3 (3.3)	2.7 (3)	3 (3.3)	2.9 (3.2)

Appendix 7 – Individual Domain

Table 13 Individual Domain Ranked by Overall Score (mean (rescaled mean))

Individual Level Research Skill Statement	ALL LHDs (n=713)	LHD 1 (n=36)	LHD 2 (n=25)	LHD 3 (n=122)	LHD 4 (n=148)	LHD 5 (n=65)	LHD 6 (n=146)	LHD 7 (n=171)
Finding relevant literature	5.9 (6.5)	5.4 (6)	6 (6.7)	5.8 (6.5)	6.1 (6.7)	6 (6.6)	6.3 (7)	5.5 (6.1)
Critically reviewing the literature	5.5 (6.1)	5.2 (5.8)	5.3 (5.8)	5.3 (5.9)	5.8 (6.4)	5.6 (6.2)	5.9 (6.6)	5.2 (5.7)
Collecting data e.g. surveys, interviews	4.8 (5.3)	4.5 (5)	4.4 (4.9)	4.6 (5.1)	4.8 (5.3)	4.9 (5.4)	5.1 (5.7)	4.6 (5.1)
Using a computer referencing system (eg Endnote)	4.6 (5.1)	3.7 (4.1)	4 (4.4)	4.2 (4.6)	4.7 (5.2)	4.6 (5.1)	5.2 (5.8)	4.4 (4.9)
Using computer data management systems	4.2 (4.6)	3.7 (4.1)	3.5 (3.8)	4 (4.4)	4.2 (4.7)	4.1 (4.5)	4.6 (5.1)	4.1 (4.5)
Designing questionnaires	4.1 (4.6)	4 (4.5)	4.1 (4.6)	3.9 (4.3)	4.3 (4.8)	3.9 (4.3)	4.4 (4.8)	4.1 (4.5)
Analysing qualitative research data	4.1 (4.5)	4 (4.5)	3.3 (3.7)	3.5 (3.9)	4.2 (4.6)	4.4 (4.8)	4.6 (5.2)	3.9 (4.3)
Analysing quantitative research data	4 (4.4)	3.7 (4.1)	3.3 (3.6)	3.7 (4.2)	4.1 (4.6)	4.1 (4.6)	4.4 (4.9)	3.7 (4.1)
Writing a research report	4 (4.4)	4 (4.4)	3.5 (3.9)	3.8 (4.2)	4 (4.4)	3.8 (4.2)	4.4 (4.9)	3.8 (4.3)
Writing a research protocol	3.7 (4.1)	3.7 (4.1)	3.8 (4.2)	3.4 (3.8)	3.5 (3.9)	3.6 (4.1)	4.1 (4.6)	3.5 (3.9)
Writing for publication in peer-reviewed journals	3.3 (3.6)	3.6 (4)	3.5 (3.9)	2.9 (3.2)	3.2 (3.5)	3.4 (3.7)	3.5 (3.9)	3.2 (3.5)
Submitting an ethics application	3.2 (3.5)	3.4 (3.7)	2.7 (3)	3.3 (3.6)	3 (3.4)	3.1 (3.4)	3.3 (3.6)	3.2 (3.6)
Providing advice to less experienced researchers	3.1 (3.5)	3 (3.3)	2.8 (3.1)	3.1 (3.5)	3.1 (3.4)	2.9 (3.3)	3.4 (3.8)	3.1 (3.5)
Securing research funding	2.6 (2.8)	3.1 (3.5)	2.1 (2.4)	2.5 (2.8)	2.3 (2.6)	2.2 (2.4)	2.7 (3)	2.8 (3.1)
Total Individual Domain	4.1 (4.5)	3.9 (4.4)	3.7 (4.1)	3.9 (4.3)	4.1 (4.5)	4 (4.5)	4.4 (4.9)	3.9 (4.4)

Appendix 8 - Barriers to Research by LHD

Table 14 Barriers to Research by LHD (n=698)

Barriers	ALL LHDs (n=698)	LHD 1 (n=35)	LHD 2 (n=24)	LHD 3 (n=119)	LHD 4 (n=145)	LHD 5 (n=63)	LHD 6 (n=143)	LHD 7 (n=168)
Other work takes priority	77%	89%	67%	76%	79%	81%	73%	78%
Lack of Time	72%	74%	79%	79%	71%	68%	65%	76%
Lack of Funds	55%	46%	63%	48%	53%	63%	55%	59%
No Backfill	50%	57%	67%	61%	47%	44%	49%	46%
Lack of Administrative Support	49%	40%	63%	50%	47%	60%	44%	50%
Lack of Management Support	42%	29%	38%	34%	47%	44%	33%	54%
Lack of Software needed	42%	40%	50%	35%	40%	37%	43%	48%
Work-Life Balance	39%	40%	54%	35%	42%	32%	41%	40%
Lack of Skills	38%	43%	50%	45%	32%	33%	37%	37%
Lack of necessary Equipment	37%	29%	50%	24%	39%	32%	38%	45%
Isolation	34%	43%	42%	24%	37%	32%	36%	36%
Lack of Coordinated approach	34%	26%	50%	30%	34%	48%	34%	30%
Other personal commitments	28%	29%	46%	25%	28%	24%	35%	24%
Intimidated by the language	17%	20%	13%	20%	12%	22%	17%	18%
Intimidated by doing it wrong	16%	11%	17%	14%	16%	14%	17%	18%
Not Interested in research	10%	6%	4%	7%	10%	8%	17%	11%
Other	10%	11%	8%	10%	5%	14%	8%	13%
Library/Internet issues	9%	14%	4%	4%	12%	6%	12%	9%

Note: Percentage of respondents – number of respondents = 698, number of total motivators selected = 4609

Appendix 9 - Motivators to Research by LHD

Table 15 Motivators to do Research by LHD (n=678)

Motivator	ALL LHDs (n=678)	LHD 1 (n=35)	LHD 2 (n=24)	LHD 3 (n=118)	LHD 4 (n=143)	LHD 5 (n=63)	LHD 6 (n=136)	LHD 7 (n=159)
To develop skills	72%	66%	71%	70%	77%	62%	73%	75%
Increased job satisfaction	64%	57%	50%	59%	69%	63%	62%	68%
Problem identified that needs changing	58%	66%	63%	65%	51%	63%	54%	58%
To keep the brain stimulated	53%	51%	54%	49%	59%	56%	53%	49%
Career advancement	38%	40%	29%	31%	38%	35%	40%	44%
Increased credibility	35%	37%	17%	36%	38%	33%	32%	38%
Desire to prove a theory / hunch	34%	43%	46%	31%	33%	40%	30%	35%
Opportunities to participate at own level	33%	31%	29%	37%	34%	27%	31%	35%
Dedicated time for research	32%	29%	29%	36%	28%	46%	31%	29%
Mentors available to supervise	32%	37%	42%	31%	32%	33%	32%	30%
Links to universities	31%	40%	29%	33%	25%	30%	32%	31%
Research encouraged by managers	29%	31%	33%	36%	29%	25%	26%	27%
Grant funds	22%	17%	33%	25%	17%	29%	20%	23%
Study or research scholarships available	22%	20%	17%	23%	18%	25%	23%	22%
Forms part of Post Graduate study	20%	17%	13%	18%	21%	22%	19%	23%
Research written into role description	18%	29%	13%	16%	15%	17%	19%	21%
Colleagues doing research	16%	20%	17%	19%	13%	16%	15%	17%
Other	10%	14%	8%	10%	8%	13%	10%	12%

Note: Percentage of respondents – number of respondents = 678, number of total motivators selected = 4199